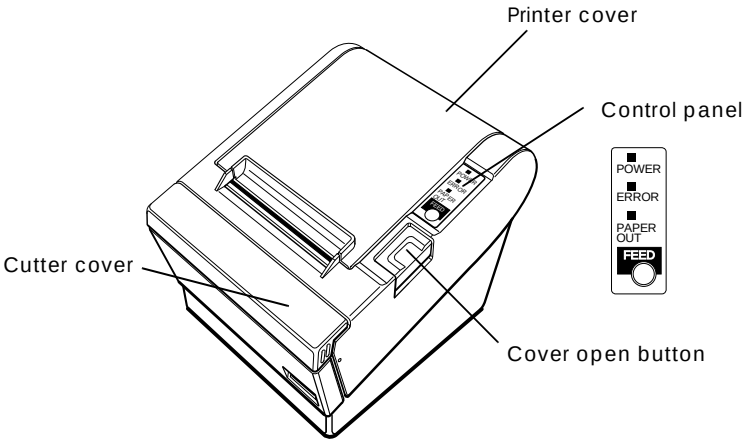
receipt printer

TM-T88II Series

Operator's Manual

400852000

Printer Parts and Labels



Caution Lables

CAUTION:

Thermal head is hot.

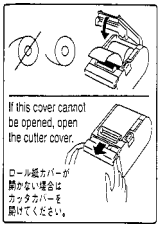
ATTENTION:

La téte thermique est chaude.

VORSICHT:

Der Thermalkopf ist heiß.

Labels



Label inside
printer cover

Label inside
cutter section

Caution label above drawer kick-out connector.

Quick Reference

This Quick Reference will direct you to key areas of this Operator's Manual. For a complete listing of topics, see the Contents.

Printer Parts and Labels ***inside front cover***

Ordering Paper ***page ix***

Where to order paper

Setting Up the Printer ***page 1-1***

How to set up the printer.

Installing and Replacing Paper ***page 1-7***

How to load or change the paper roll.

Solving Problems ***page 3-1***

How to correct problems.

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FCC CLASS A

FCC Compliance Statement

For American Users

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

WARNING

The connection of a non-shielded printer interface cable to this printer will invalidate the FCC Verification of this device and may cause interference levels which exceed the limits established by the FCC for this equipment.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

FOR CANADIAN USERS

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigenves du Règlement sur le matériel brouileur du Canada.

GEREÄUSCHPEGEL

Gemäß der Dritten Verordnung zum Gerätesicherheitsgesetz (Maschinenlärminformations- Verordnung-3. GSGV) ist der arbeitsplatzbezogene Geräusch-Emissionswert kleiner als 70 dB(A) (basierend auf ISO 7779).

DECLARATION OF CONFORMITY

Product Name: Printer

Model Name: M129B

The printer conforms to the following Directives and Norms

Directive 89/336/EEC
- EN 55022 (1987 and 1994 2nd/1995) Class B
- EN 50082-1 (1992)
- IEC 801-2 (1991)
- IEC 801-3 (1984)
- IEC 801-4 (1988)

Directive 90/384/EEC
- EN45501: (1992)

EMI and Safety Standards Applied

The following standards are applied only to the printers that are so labeled. (EMC is tested using the EPSON PS-170 power supply)

Europe:	CE marking EN55022 EN50082-1 EN45501 Safety Standard: TÜV (EN 60950)
North America:	EMI: FCC Class A Safety standards: UL 1950-2TH-D3 C-UL
Japan:	EMI: VCCI Class 1
Oceania:	EMI: AS/NZS 3548 Class B

About This Manual

Setting Up and Using

- **Chapter 1** contains information on unpacking the printer and setting it up.
- **Chapter 2** contains information on using the printer.
- **Chapter 3** contains troubleshooting information.

Reference

- **Chapter 4** contains specifications.
- **Appendix A** tells how to change the DIP switch and paper near end settings, and **Appendix B** lists the EPSON Sales Subsidiaries and their addresses.

Warnings, Cautions, and Notes

⚠ WARNING:

Warnings must be followed carefully to avoid serious bodily injury.

⚠ CAUTION:

Cautions must be observed to avoid minor injury to yourself or damage to your equipment.

Note:
Notes have important information and useful tips on the operation of your printer.

Introduction

Features

The TM-T88 II Series are high-quality POS printers that can print on a paper roll. The printers have the following features:

Printing

- ❑ High speed printing: 28.4 lines / second (1 / 6 inch feed) maximum.
- ❑ Low-noise thermal printing.
- ❑ High reliability due to a stable mechanism.

Application Software

- ❑ Command protocol is based on the ESC / POS™ standard.
- ❑ Various layouts are possible by using page mode.
- ❑ Characters can be scaled up to 64 times as large as the standard size. Smoothing is also possible.
- ❑ Bar code printing is possible by using a bar code command. Bar codes can be printed both in the vertical direction (fence bar code) and in the horizontal direction (ladder bar code).
- ❑ Repeated operation and copy printing are possible by using macro definitions.
- ❑ Character font size (12 x 24 font or 9 x 17 font) can be selected using a command.

Printer Handling

- ❑ Easy paper roll loading.
- ❑ An auto-cutter is standard.
- ❑ The printer allows easy maintenance for tasks such as head cleaning.
- ❑ Four different print densities can be selected by DIP switches.
- ❑ The built-in interface provides control capability for two drawers.

- ❑ Available non-volatile bit image buffer (256K bytes)

Options and Accessories

- ❑ EPSON power supply unit, PS-170.
- ❑ Affixing tapes (model : DF-10).
- ❑ RS-485 interface board can be equipped as a dealer option.
- ❑ Wall hanging bracket set (WH-10)

Ordering Paper and Supplies

Thermal roll paper can be ordered from the supplier in your area.

Specified Thermal Roll Paper: NTP080-80

In Japan:	Nakagawa Seisakujo 2-5-21 Nishiki-Cho Warabi-Shi Saitama-Ken 335 Japan Tel: (048) 444-8211 Fax: (048) 443-6652
In U.S.A.:	Nakagawa Mfg (USA) Inc. 2305 Lincoln Avenue Hayward, CA 94545 USA Tel: (510) 782-0197 Fax: (510) 782-7124
In Europe:	Nakagawa Mfg (Europe) GmbH. Krützpoort 16, 47804 Krefeld, Germany Tel: 02151-711051 Fax: 02151-713293
In Southeast Asia:	N.A.K. Mfg (Malaysia) SDN BHD Lot 19-11, Bersatu Industrial Complexs, Jalan Satu, Kaw Per. Cheras Jaya,. Balakong Industrial Area, 43200 Cheras. Selangor Darul Ehsan, Malaysia Tel: 03-9047896, 9047900, 9047691 Fax: 03-9047889

Other Qualified Suppliers for Thermal Paper

The following suppliers sell thermal paper that may be used if desired. Contact each company for information.

Original paper: TF50KS-E
Nippon Paper Industry Co., Ltd.
1-12-1, Yuraku-Cho, Chiyoda-Ku
Tokyo 100 Japan

Tel: 03-3218-8000
Fax: 03-3216-1375

Original paper: PD 160R
New Oji Paper Mfg. Co., Ltd.
7-5 Ginza 4-Chome Chuo-Ku
Tokyo 104 Japan

Tel: 03-3563-4800
Fax: 03-3563-1136

Original paper: AF50KS-E
Jujo Thermal Oy (Finland)
P.O. Box 92 FIN27501 Kauttua Finland

Tel: 38-3932900
Fax: 38-3932419

Original paper: P350(F380)
P310
Kanzaki Specialty Papers, Inc.
1500 Main Street
Springfield, MA 01115 U.S.A.

Tel: (413)736-3216
Fax: (413)734-5101

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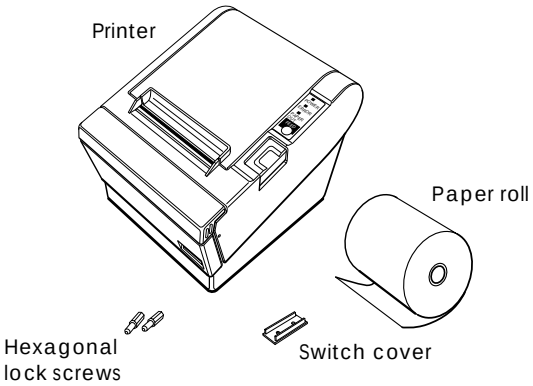
Chapter 1

Setting Up the Printer

Unpacking

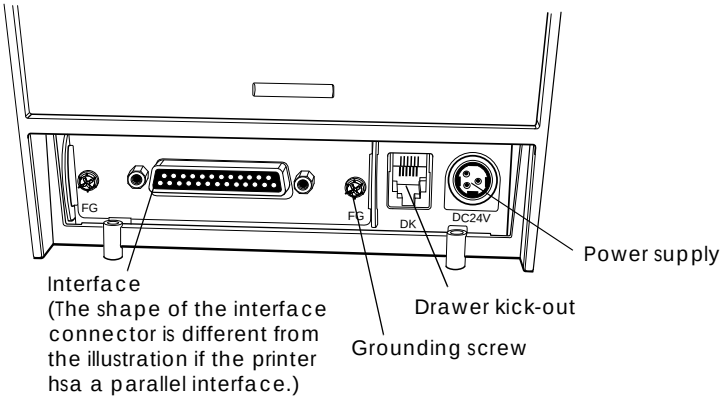
Your printer box should include these items. If any items are damaged or missing, please contact your dealer for assistance.



See the note on page 1-3 for information about the hexagonal lock screws.

Connecting the Cables and Grounding the Printer

You can connect up to four cables to the printer. They all connect to the connector panel on the back of the printer, which is shown below:



Notes:
There is a caution label above the drawer kick-out connector. Depending on the interface installed, the interface connector on your printer may look different from the one illustrated.

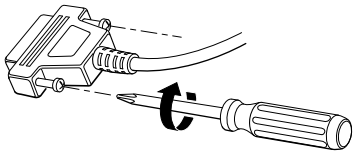
Before connecting any of the cables, make sure that both the printer and the computer are turned off.

Connecting the computer

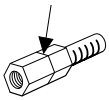
You need an appropriate interface cable.

1. Plug the cable connector securely into the printer's interface connector.

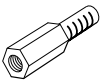
2. If the printer has a serial interface, tighten the screws on both sides of the cable connector.



Note:
Your printer has inch-type hexagonal lock screws installed. If your interface cable requires millimeter-type screws, replace the inch-type screws with the enclosed millimeter-type screws using a hex screwdriver (5 mm).



Inch screw



Millimeter screw

If the printer has a parallel interface, squeeze the wire clip on the printer together until they lock in place on both sides of the connector.

3. Attach the other end of the cable to the computer.

Connecting the Drawer

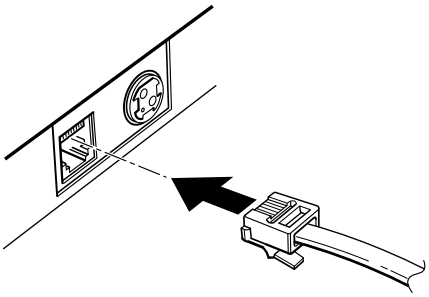
⚠ *WARNING:*

Use a drawer that matches the printer specification. Using an improper drawer may damage the drawer as well as the printer.

⚠ *CAUTION:*

Do not connect a telephone line to the drawer kick-out connector; otherwise the printer and the telephone line may be damaged.

Plug the drawer cable into the drawer kick-out connector on the back of the printer next to the power supply connector.



Anschließen der Lade

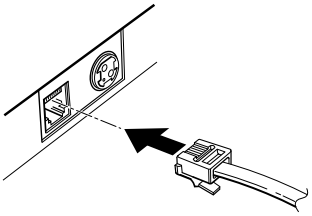
⚠ *WARNUNG:*

Eine für den Drucker geeignete Lade verwenden. Bei Verwendung einer falschen Lade kann diese oder der Drucker beschädigt werden.

⚠ *ACHTUNG:*

Kein Telefonkabel an die Schnappsteckerbuchse anschließen, da sonst der Drucker und die Telefonkabel beschädigt werden können.

Das Kabel der Lade an die Schnappsteckerbuchse hinten am Drucker neben dem Netßzanschluß anschließen.

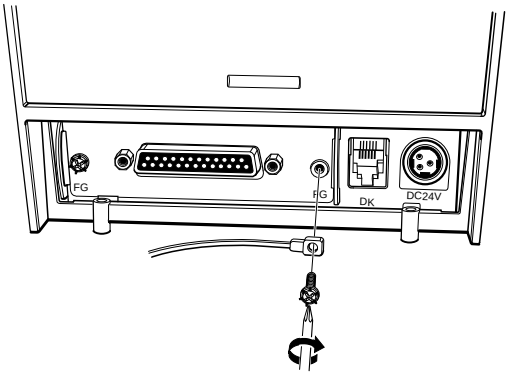


Grounding the Printer

You need a ground wire to ground your printer. Make sure that the wire is AWG 18 or equivalent.

1. Make sure that the printer is turned off.

2. Connect the ground wire to the printer using one of the the FG screws on the back of the printer, as shown.



Connecting the Power Supply

Use the optional EPSON PS-170 or equivalent power supply for your printer.

⚠ *WARNING:*

Make sure that you use the EPSON PS-170 power supply or equivalent. Using an incorrect power supply may cause fire or electrical shock.

⚠ *CAUTIONS:*

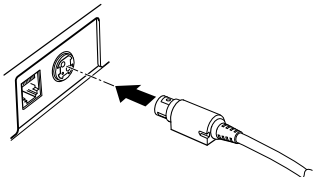
When connecting or disconnecting the power supply from the printer, make sure that the power supply is not plugged into an electrical outlet. Otherwise you may damage the power supply or the printer.

If the power supply's rated voltage and your outlet's voltage do not match, contact your dealer for assistance. Do not plug in the power cord. Otherwise, you may damage the power supply or the printer.

1. Make sure that the printer's power switch is turned off, and the power supply's power cord is unplugged from the electrical outlet.

2. Check the label on the power supply to make sure that the voltage required by the power supply matches that of your electrical outlet.

3. Plug in the power supply's cable as shown below. Notice that the flat side of the plug faces down.



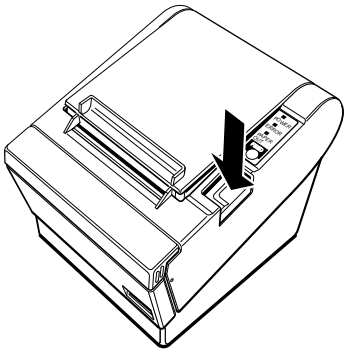
Note:
To remove the DC cable connector, make sure that the power supply's power cord is unplugged; then grasp the connector at the arrow and pull it straight out.

Installing or Replacing the Paper Roll

Note:
Be sure to use paper rolls that meet the specifications. Do not use paper rolls that have the paper glued to the core because the printer cannot detect the paper end correctly.

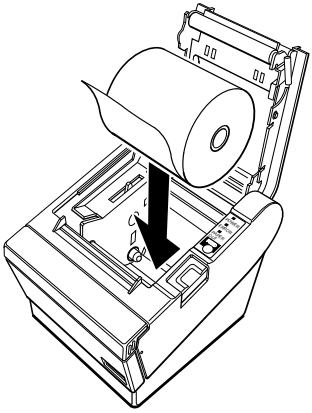
1. Make sure that the printer is not receiving data; otherwise, data may be lost.

2. Open the paper roll cover by pressing the cover-open button. If the cover-open button will not open the cover, see page 3-4 or 3-6 in Troubleshooting.

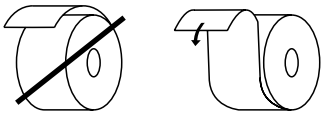


3. Remove the used paper roll core if there is one.

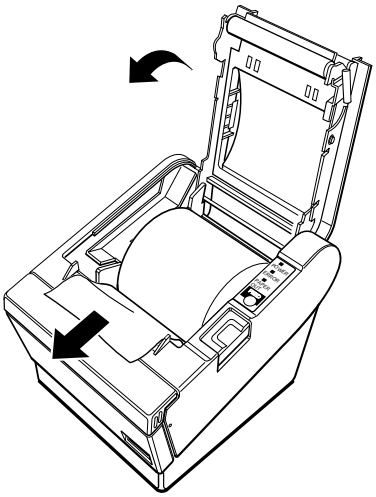
4. Insert the paper roll as shown.



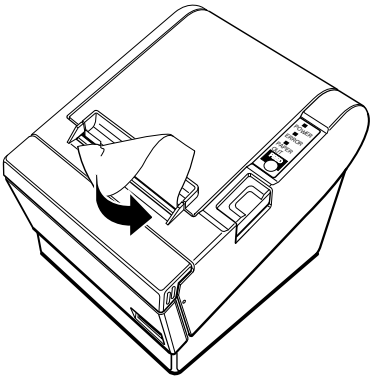
5. Be sure to note the correct direction that the paper comes off the roll.



6. Pull out a small amount of paper, as shown. Then close the cover.



7. Tear off the paper as shown.

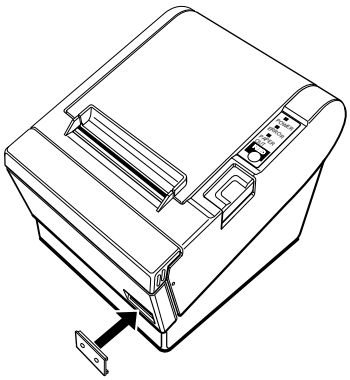


Using the Power Switch Cover

⚠ WARNING:

If an accident occurs when the power switch cover is attached, unplug the power supply cord from the outlet immediately. Continued usage may lead to fire or shock.

You can use the enclosed power switch cover to make sure that the power switch is not accidentally pressed. If you want to use this cover, install it as shown in the illustration below.



Self Test

The self test lets you know if your printer is operating properly. It checks the control circuits, printer mechanisms, print quality, ROM version, and DIP switch settings.

This test is independent of any other equipment or software.

Running the self test

1. Make sure the printer is turned off and the printer covers are closed properly.

2. While holding down the FEED button, turn on the printer using the switch on the front of the printer to begin the self test. The self test prints the printer settings and then prints the following, cuts the paper, and pauses. (The PAPER OUT light blinks.)

Self test printing.
Please press the PAPER FEED button.

3. Press the FEED button to continue printing. The printer prints a pattern using the built-in character set.

4. The self test automatically ends and cuts the paper after printing the following:

*** completed ***

The printer is ready to receive data as soon as it completes the self test.

Note:
If you want to pause the self test manually, press the FEED button. Press the FEED button again to continue the self test.

Adjustments and Settings

The TM-T88II Series are set up at the factory to be appropriate for almost all users. It does, however, offer some settings for users with special requirements.

It has DIP switches that allow you to change communication settings, such as handshaking and parity check, as well as print density.

The TM-T88II Series also have a near-end sensor for the paper. This can give you a warning when the paper is almost out. If you find that there is not enough paper remaining on the roll when the near-end detector is triggered, you can change the near-end sensor setting.

See Appendix A if you need to make any of these changes.

Chapter 2

Using the Printer

Operating the Control Panels

You can control the basic paper feeding operations of the printer with the button on the control panel. The indicator lights help you monitor the printer's status.

Control Panel

Button

The button can be disabled by the **ESC c 5** command.

Press the FEED button once to advance paper one line. You can also hold down the FEED button to feed paper continuously.

Panel lights

POWER

The POWER light is on whenever the printer is on.

ERROR

This indicates an error. See Chapter 3 for information on what to do when this light comes on.

PAPER OUT

This light indicates the near end of the paper roll. Install a new paper roll and the printer will continue printing.

When the light blinks, it indicates the self-test printing standby state or macro execution standby state when the macro execution command is used.

Chapter 3

Troubleshooting

Troubleshooting

This chapter gives solutions to some printer problems you may have.

General problems

The lights on the control panel do not come on.

Make sure that the power supply cables are correctly plugged into the printer, the power unit, and to the power outlet.

Make sure that power is supplied to the power outlet. If the outlet is controlled by a switch or timer, use another outlet.

Printing problems

The ERROR light is on (not blinking) and nothing is printed.

If the PAPER OUT light is **on**, the paper roll is not installed or is at or near the end. Install a new paper roll. See Chapter 1 for instructions.

If the PAPER OUT light is **off**, make sure that the printer cover is properly closed. Press the printer cover until the cover audibly clicks into place.

The ERROR light is blinking and the printer does not print.

First, turn off the printer and check for a paper jam. (See the paper jam description on page 3-3.)

If there is no paper jam and the printer has been printing for quite a while, the print head may be overheated. If the print head is overheated, the printer will resume printing when the head has cooled (usually within two or three minutes).

If there is no paper jam and the print head is not overheated, turn off the printer and turn it back on after about 10 seconds. If the ERROR light is still flashing, contact a qualified service person.

The ERROR light is off, but nothing is printed.

Try to run the self test to check that the printer works properly. See the self test instructions in Chapter 1 to run the self test. If the self test does not work, contact your dealer or a qualified service person.

If the self test works properly, check the following:

1. Check the connection at both ends of the interface cable between the printer and the computer. Also make sure that this cable meets the specifications for both the printer and the computer.

2. The data transmission settings may be different between the printer and computer. Make sure that the printer's DIP switch settings for data transmission are the same as the computer's. You can print the printer's interface settings using the self test.

If the printer still does not print, contact your dealer or a qualified service person.

Printing is poor.

Paper dust on the heating element of the thermal print head can lower the print quality. Try cleaning the print head as described below:

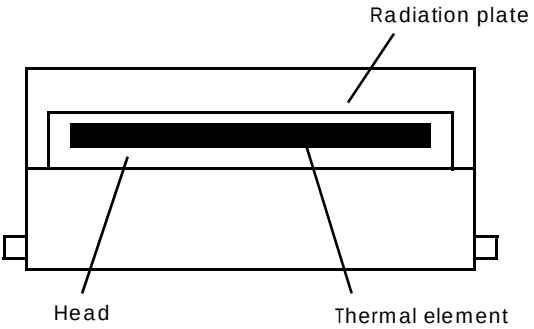
Cleaning the print head

⚠ *CAUTIONS:*

After printing, the print head can be very hot. Be careful not to touch it. Also let it cool before you clean it.
Do not damage the print head by touching it with your fingers or any hard object.

1. Open the printer cover.

2. Clean the thermal element of the print head with a cotton swab moistened with an alcohol solvent (ethanol, methanol, or IPA).



Paper handling problems

Paper is jammed inside the printer.

⚠ *CAUTIONS:*

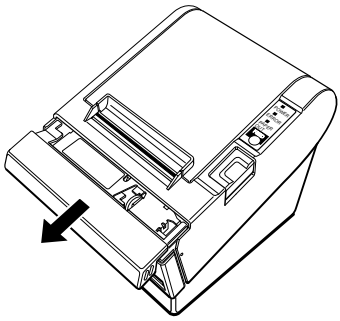
Do not touch the print head because it can be very hot after printing continuously for a long time.

To clear a paper jam, follow the steps below:

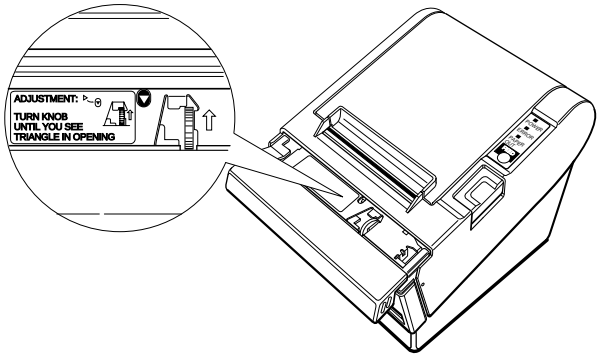
1. Turn the printer off and press the cover open button to open the cover.

2. Remove the jammed paper and put the roll back in the printer and close the cover.

3. If paper is caught in the automatic cutter and the printer cover cannot be opened, open the cutter cover as shown below.



4. Then turn the knob until you see ▽ in the opening, as shown in the illustration below. This returns the cutter blade to the normal position. Also notice that there is a label near the cutter to assist you.



5. Close the cutter cover.

6. Open the printer cover.

7. Remove the jammed paper.

Auto cutter problems

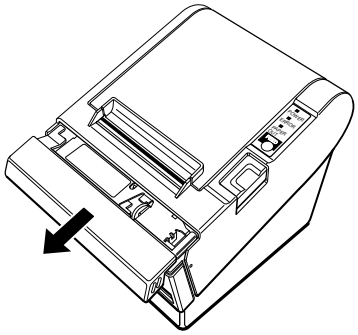
The auto cutter is jammed.

If a foreign object such as a push pin or paper clip drops in the auto cutter and causes the auto cutter to lock up, the printer enters an error state and begins the recovery operation automatically.

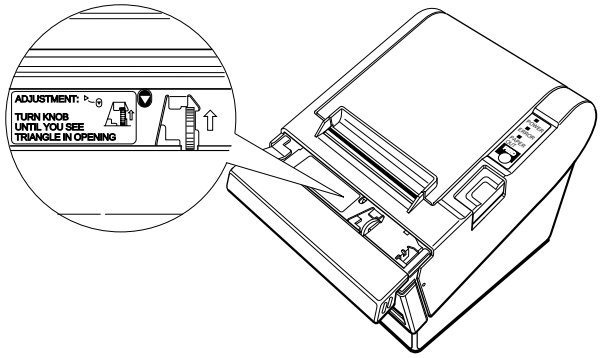
If the problem is not serious, the auto cutter returns to its normal position without any intervention by the user.

If the auto cutter does not return to its normal position by itself, follow the steps below to correct the problem:

1. Pull the cutter cover toward you so that you can rotate the cutter motor knob.



2. Following the instructions on the label, rotate the knob until the ▽ appears in the hole.



3. Close the cutter cover.

Hexadecimal Dump

This feature allows experienced users to see exactly what data is coming to the printer. This can be useful in finding software problems. When you turn on the hex dump function, the printer prints all commands and other data in hexadecimal format along with a guide section to help you find specific commands.

To use the hex dump feature, follow these steps:

1. After you make sure that the printer is off, open the cover.

2. Hold down the FEED button while you turn on the printer.

3. Close the cover.

4. Run any software program that sends data to the printer. The printer prints "Hexadecimal Dump" and then all the codes it receives in a two-column format. The first column contains the hexadecimal codes and the second column gives the ASCII characters that correspond to the codes.

   ```
   Hexadecimal Dump
   1B 21 00 1B 26 02 40 40   .!..&.@@
   1B 25 01 1B 63 34 00 1B   .%..c4..
   41 42 43  44 45 46 47 48   ABCDEFGH
   ```

   - ❑ A period (.) is printed for each code that has no ASCII equivalent.

   - ❑ During the hex dump all commands except **DLE EOT** and **DLE ENQ** are disabled.

5. Open the cover to set the printer off line so that it will print the last line.

6. Close the cover and turn off the printer or reset it to turn off the hex dump mode.

Chapter 4

Reference Information

Printing Specifications

Printing method:	Thermal line printing
Dot density:	180 dpi × 180 dpi [the number of dots per 25.4 mm (1")]
Printing direction:	Unidirectional with friction feed
Printing width:	72 mm (2.83"), 512 dot positions
Characters per line (default):	42 (Font A) 56 (Font B)
Character spacing (default):	0.28 mm (.01") (2 dots) (Font A) 0.28 mm (.01") (2 dots) (Font B) Programmable by control command.
Printing speed - High speed mode:	28.4 lines / second maximum (1 / 6" feed, at 24V, 20° C, density level 2) Approximately 120 mm / second maximum (approximately 4.72" / second maximum) Speed is adjusted deepening on the applied voltage to the printer and head temperature conditions automatically.
Printing speed - Low power comsumption mode:	Approximately 16.5 lines / second (1 / 6" feed) Approximately 70 mm / second (approximately 2.76" / second)
Printing speed - when a ladder bar code is printed:	Approximately 42 mm / second (approximately 1.7'' / second)

Notes:
Printing speed may be slower, depending on the data transmission speed and the combination of control commands.

There may be variations in printing after switching the mode of the printing speed. To prevent this for logo printing, using a downloaded bit image is recommended. (Change in printing speed does not occur during downloaded bit image printing).

Paper feeding speed:	Approximately 120 mm / second (approximately 4.72" / second) continuous paper feeding
Line spacing (default):	4.23 mm (1 / 6") Programmable by control command.
Number of characters:	Alphanumeric characters: 95 International characters: 32 Extended graphics: 128 × 7 pages (including one space page) kanji chareacters: JIS-Level 1, Level 2 (JIS X0208-1990)
Character structure:	Font A: 12 × 24 (including 2-dot spacing in horizontal) Font B: 9 × 17 (including 2-dot spacing in horizontal) Kanji: 24 × 24 Font A is the default

	Standard		Double-height		Double-width		Double-width/ Double-height	
	W x H (mm)	CPL	W x H (mm)	CPL	W x H (mm)	CPL	W x H (mm)	CPL
Font A 12 x 24	1.41 x 3.39 (.06" x .13")	42	1.41 x 6.77 (.06" x .27")	42	2.82 x 3.39 (.11" x .13")	21	2.82 x 6.77 (.11" x .27")	21
Font B 9 x 17	0.99 x 2.40 (.04" x .09")	56	0.99 x 4.80 (.04" x .19")	56	1.98 x 2.40 (.08" x .09")	28	1.98 x 4.80 (.08" x .19")	28
Kanji 24 x 24	3.39 x 3.39 (.13''x.13'')	21	3.39 x 6.77 (.13''x.27'')	21	6.77 x 3.39 (.27''x.13'')	10	6.77 x 6.77 (.27''x.27'')	10

* CPL = Characters Per Line

* Space between characters is not included

* Characters can be scaled up to 64 times as large as the standard sizes.

Paper Specifications

Paper roll (single-ply):

Size:	Width: 79.5 mm ± 0.5 mm (3.13" ± 0.02")
Maximum outside diameter:	83 mm (3.27")
Paper roll spool diameter:	Inside: 12 mm (0.47") Outside: 18 mm (0.71") Paper must not be pasted to the paper roll spool.
Take up paper roll width:	$80 \pm {}^{0.5}_{1.0}$ mm 3.15'' $\pm {}^{0.02''}_{0.04''}$

Electrical Characteristics

Supply voltage:	+24 VDC ± 7% (optional power supply: EPSON PS-170)	
Current consumption: (at 24V)	High speed mode:	Mean: Approximately 1.7A (character font A α-N all columns printing) Peak: Approximately 7.7A
	Low power consumption mode:	Mean: Approximately 1.2A (Character font A α-N all colums printing) Peak: Approximately 6.6A
	Standby:	Mean: Approximately 0.2A

Note:
Maximum 1A for drawer kick-out driving

Environmental Conditions

Temperature:	Operating:	5° to 45°C (41° to 113°F)
	Storage:	-10° to 50°C (14° to 122°F) (except for paper)
Humidity:	Operating:	10 to 90% RH
	Storage:	10 to 90% RH (except for paper)

Appendix A

Dip Switch and Paper Near End Settings

Although the factory settings are best for almost all uses, if you have special requirements, you can change the DIP switch or paper near end settings.

Setting the DIP Switches

DIP switch functions

Your printer has two sets of DIP switches. The functions of the switches are shown in the following tables.

Serial interface specification

Set 1

SW	Function	ON	OFF
1-1	Data receive error	Ignored	Prints "?"
1-2	Receive buffer capacity	45 bytes	4K bytes
1-3	Handshaking	XON/XOFF	DTR/DSR
1-4	Data word length	7 bits	8 bits
1-5	Parity check	Enabled	Disabled
1-6	Parity selection	Even	Odd
1-7	Transmission speed (See the table below)		
1-8			

Transmission Speed

Transmission Speed (BPS)-bits per second	**1-7**	**1-8**
2400	ON	ON
4800	OFF	ON
9600	ON	OFF
19200	OFF	OFF

Set 2

SW	**Function**	**ON**	**OFF**
2-1	Handshaking (BUSY condition)	Receive buffer full	Off line or receive buffer full
2-2	Reserved: do not change settings	Fixed to OFF	
2-3	Selects print density	Refer to table below	
2-4			
2-5	Reserved: do not change settings	Fixed to OFF	
2-6	Reserved: do not change settings	Fixed to OFF	
2-7	I/F pin 6 reset signal	Enabled	Disabled
2-8	I/F pin 25 reset signal	Enabled	Disabled

Print Density Selection

Print Density	SW 2-3	SW 2-4
1 Low power comsumption mode	ON	ON
2(Normal)	OFF	OFF
3	ON	OFF
4 (Dark)	OFF	ON

Notes:

- With the optional RS-485 interface, DIP switches 2-7 and 2-8 are disabled.
- Changes in DIP switch settings (excluding switches 2-7 and 2-8 interface reset signals) are recognized only when the printer power is turned on or when the printer is reset by using the interface. If the DIP switch setting is changed after the printer power is turned on, the change does not take effect until the printer is turned on again or is reset.
- If you turn on DIP switch 2-7 or 2-8 while the printer is turned on, the printer may be reset, depending on the signal state. DIP switches should not be changed while the printer power is on.
- If the print density is set to level 3 or 4, the printing will be at the low speed.
- In a low power consuption, printing speed is fixed to 70 mm/sec.

Parallel interface specification

Set 1

SW	Function	ON	OFF
1-1	Auto line feed	Always enabled	Always disabled
1-2	Receive buffer capacity	45 bytes	4K bytes
1-3~ 1-8	Undefined	–	–

Set 2

SW	Function	ON	OFF
2-1	Handshaking (BUSY condition)	• Receive buffer full • Reading data	• Off-line • Receive buffer full • Reading data
2-2	Reserved (Do not change settings)	Fixed to Off	
2-3	Selects print density	Refer to table below	
2-4			
2-5~ 2-7	Reserved (Do not change settings)	Fixed to Off	
2-8	I/F pin 31 reset signal (Do not change settins)	Fixed to On	

Print Density Selection

Print Density	SW 2-3	SW 2-4
1 Low power consumption mode	ON	ON
2 (Normal)	OFF	ON
3	ON	OFF
4 (Dark)	OFF	OFF

Notes:

- Changes in DIP switch settings (excluding switch 2-8 interface reset signal) are recognized only when the printer power is turned on or when the printer is reset by using the interface. If the DIP switch setting is changed after the printer power is turned on, the change does not take effect until the printer is turned on again or is reset.
- If you turn on DIP switch 2-8 while the printer is turned on, the printer may be reset, depending on the signal state. DIP switches should not be changed while the printer power is on.
- If the print density is set to level 3 or 4, the printing will be at the low speed.
- In a low power consumption, printing is fixed to 70mm/sec.

Changing the DIP switch settings

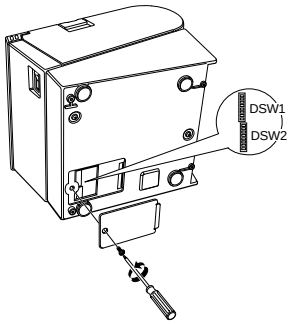
If you need to change settings, follow the steps below to make your changes:

⚠ *CAUTION:*

Turn off the printer while removing the DIP switch cover to prevent an electric short, which can damage the printer.

1. Make sure the printer is turned off.

2. Remove the screw from the DIP switch cover. Then take off the DIP switch cover, as shown in the illustration below.



3. Set the switches using a pointed tool, such as tweezers or a small screwdriver.

4. Replace the DIP switch cover. Then secure it with the screw.

The new settings take effect when you turn on the printer.

Adjusting the Paper Near End Detector

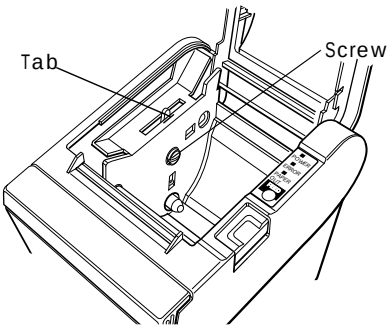
The paper near end detector detects when paper is almost gone by measuring the diameter of the paper roll. The detector has two settings.

Because of variations in paper roll cores, it is not possible for the detector to measure exactly the length of paper left on the roll when the detector is triggered. Of the two settings, the factory setting (lower) leaves the least amount of paper on the roll when the sensor is triggered. If you want more paper left, change the setting as described below.

Note:
The factory setting is based on a paper roll core with an outside diameter of 18mm and an inside diameter of 12mm. If you use a paper roll with a core with an outside diameter of more than 18mm, it is better to change to the upper setting, as described below.

1. Open the printer cover, and remove the paper roll.

2. Loosen the adjusting screw and move the tab up to the upper setting.



3. Tighten the adjusting screw, and check to be sure that the detecting lever moves freely.

4. Replace the paper roll.

Appendix B

EPSON Sales Subsidiaries

EPSON AMERICA INC./OEM DIV.	20770 Madrona Ave. Torrance, CA 90559-2842 U.S.A. Tel : 1-310-787-6300 Fax : 1-310-782-5350
EPSON EUROPE B.V.	Prof. J.H. Bavincklaan 5 1183 AT Amstelveen The Netherlands Tel : 31-(0)20-5475-251 Fax : 31-(0)20-6454-315
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EPSON U.K. LIMITED	Campus 100 Maylands Ave. Hemel Hempstead Herts. HP2 7TJ United Kingdom Tel : 44-1(0)442-61144 Fax : 44-1-(0)442-227-244
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EPSON TAIWAN TECHNOLOGY & TRADING LTD.	10f, No. 287, Nanking E. Road, Sec. 3 Taipei, Taiwan R.O.C. Tel : 886-(0)2-717-7360 Fax : 886-(0)2-718-9366
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EPSON AUSTRALIA PTY. LTD.	70 Gibbes Street, Chatswood NSW 2067 Australia Tel : 61-(0)2-415-9000 Fax : 61-(0)2-417-0077
EPSON HANBAI CO., LTD. TOKYO OFFICE:	3F Building Kawaguchi Fuda Chofu-Shi Tokyo 182 Japan Tel : 0424-99-7829 Fax : 0424-99-7834
OSAKA OFFICE:	13F Shin-Osaka Daiichi-Seimei Bldg. 5-24 3-Chome Miyahara Yodogawa-ku Osaka 532 Japan Tel : 06-350-4964 Fax : 06-350-4968